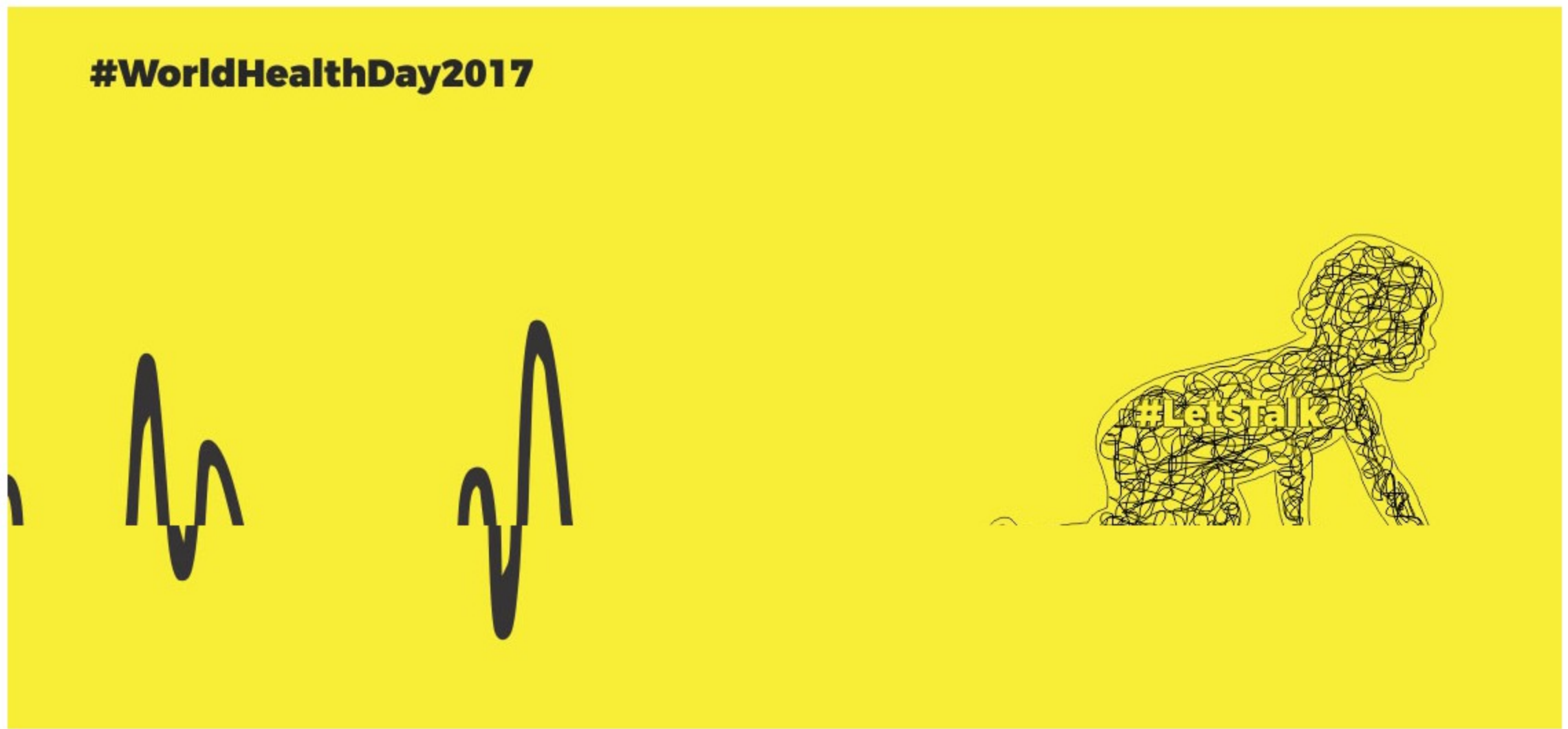# Identifying Contexts for Relationships between Coverage of Health Interventions and Infant Mortality Rate in African Countries

Posted by Raghuveer Dinavahi in MEL, Private Sector Development

Introduction

The way in which we analyse and understand data is important, and should be reiterated this World Health Day. The correlation between the Composite Coverage Index and the Infant Mortality Rate is negative, suggesting that such interventions may be ineffective. Yet dis-aggregating this data into economic status, place of residence and level of education may suggest that these interventions can be successful in some African contexts.

Methodology

The WHO describes the Composite Coverage Index (CCI) as follows:

"The composite coverage index is a weighted score reflecting coverage of eight RMNCH interventions along the continuum of care: demand for family planning satisfied; antenatal care coverage (at least one visit); births attended by skilled health personnel; BCG immunization coverage among one-year-olds; measles immunization coverage among one-year-olds; DTP3 immunization coverage among one-year-olds; children aged less than five years with diarrhoea receiving oral rehydration therapy and continued feeding; and children aged less than five years with pneumonia symptoms taken to a health facility."[1]

The coverage is measured on a percentage scale from 1 to 100. A high value of this index indicates that a high percentage of population is being covered under the 8 RMNCH interventions.

Infant Mortality Rate (IMR) is defined as follows:

"The infant mortality rate is the number of deaths under one year of age occurring among the live births in a given geographical area during a given year, per 1,000 live births occurring among the population of the given geographical area during the same year."[2]

One hypotheses that was chosen to be tested at this point was that if the CCI is high then the Infant Mortality rate should be low. Mathematically, these values should be strongly negatively correlated for a region or geography.

If we had to work backwards, then we would look at strongly negatively correlated scores, and can decipher that in those regions, a higher CCI is resulting in a low IMR. This would imply that in those contexts, the interventions have been effective in resulting a lower IMR as compared to a complementary context.

Study

Data from the health equity monitor of WHO and IMR was taken for comparison. Clean data was available for 33 countries, of which 15 were from the west African region and 18 from the rest of Africa. The most recent DHS or MICS was used to obtain the CCI scores for the 33 countries whose CCI values were present for the year 2010 or later. The IMR values were obtained for the year 2014 for these 33 countries. An assumption was made that the IMR scores of these countries do not fluctuate much in the four-year period 2010-2014.

The CCI scores for each group were correlated with the IMR scores to obtain the table below. The colour coding below is to differentiate within groups (economic status, place of residence and education): green indicates a high correlation and red indicates a low correlation, with orange in between.

Results

• Q3 (Middle Class) showed the highest negative correlation. This could mean that lower IMR for this group could be attributed to the coverage of the RMNCH interventions for this group.

• Rural areas showed greater negative correlation compared to urban areas and a similar inference can be made here as well.

A similar test was run to compare across regions (western Africa and rest of Africa). The results have been documented below. The colour coding is similar but now it is across regions for every subgroup.

We can clearly see that in the Rest of Africa, the RMNCH interventions could have resulted in decrease in IMR whereas in west Africa this may not necessarily be the case.

References:
1. http://apps.who.int/gho/indicatorregistry/App_Main/view_indicator.aspx?iid=4489
2. https://stats.oecd.org/glossary/detail.asp?ID=1347
3. https://www.indexmundi.com/map/?v=29&r=af&l=en

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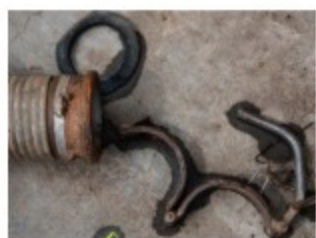Tags: Public Health, Child Protection, Women's Empowerment, WASH

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Raghuveer's skill lies in Monitoring, Learning and Evaluation.

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